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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,593	11/28/2003	Pascal Gabet	4590-242	5672
33308	7590	02/23/2005	EXAMINER	
LOWE HAUPTMAN GILMAN & BERNER, LLP 1700 DIAGNOSTIC ROAD, SUITE 300 ALEXANDRIA, VA 22314			LE, DINH THANH	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

<b>Office Action Summary</b>	<b>Application No.</b> 10/722,593	<b>Applicant(s)</b> GABET ET AL.	
	<b>Examiner</b> DINH T. LE	<b>Art Unit</b> 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/28/03 &amp; 5/4/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

Art Unit: 2816

**DETAILED ACTION*****Drawings***

Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claims Objection***

The claims 3-4 and 6 are objected to in that the phrase "one of the claims 1 or 2" on line 1 should be corrected as --claim 1 or 2 --or --either claim 1 or claim 2-- . Correction is required.

Claims 10-17 are objected to because they do not clearly recite necessary steps of the method claims.

***Claim Rejections***

***Claim Rejections - 35 USC § 112***

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction or clarification is required.

In claim 1, the recitation “the division rank command” on line 3, “the command” on lines 5-6 and “the synthesis step” on line 6 lacks clear antecedent basis. It is unclear what “divider Nb”, “frequency F1→F2”, and “step F3→F4” are since they are not clearly defined in the claim. The same is true for claim 10.

In claim 4, the recitation “the frequency F3” on line 5 lacks clear antecedent basis. It is unclear what the “N1” and “N2” are, how the divider can “take” the values N1 to N2, how these values can follow an arithmetic progression, and what the “progression” and “the sequence” are. The recitation “F4” and “F2” is confusing because it is unclear if this is additional “F4” and “F2” or further recitation of the previously claimed “F4” and “F2” in claim 1. The same is true for reciting “F3”, “F4” in claims 5, 7 and 14.

In claim 6, the recitation “the values” on line 3 lacks clear antecedent basis. It is unclear what the “non-arithmetic progression” and “N1” are and how the values N1 to Np can follow the non-arithmetic progression.

In claim 7, it is unclear what the “two consecutive elements” are and where they come from. The same is true for reciting “non-arithmetic sequence” and “two consecutive sequence” in claim 13, “two consecutive elements” in claim 14.

In claim 8, it is unclear what the “highest division rank Nb” is, if this is additional “Nb” or a further recitation of the previously claimed “Nb” on line 3 of claim 1, and how it can be chosen. The same is true for claims 13 and 15.

In claim 9, the recitation “the fractional step synthesizer” and “the output signal” lacks clear antecedent basis. Also, it is unclear how the recitation “a mixer receiving the output signal from the fractional step synthesizer and a mixing signal” is read on the preferred embodiment. Insofar as understood, no such limitation is seen on the drawings.

In claim 10, it is not understood how the division rank, the synthesis step and the frequency can be modified.

In claim 16, the recitation “the modification” and “the command” on line 2 lacks antecedent basis. It is unclear how the command can be “modified” and where it comes from.

In claim 17, the recitation “the reference frequency”, “the ratio” and “the above claims” lacks clear antecedent basis. It is unclear what they are and where they come from. Also, it is not understood what the “ $F_{ref}/\Delta F$ ”, “ $N_1 \dots N_p$ ” and “LCM” are.

The remaining claims are dependent from the above claims and therefore also considered indefinite.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2816

Claims 1, 4, 6-11, and 13-16 are rejected under 35 USC 102 (b) as being anticipated by Petersson et al (US 5,140,284).

As the best construed, Petersson et al disclose in Figure 1 a circuit comprising:

- a synthesizer (21-25) for synthesizing a frequency (25-112.5MHZ) with a variable steps ( $37.5\text{MHZ} - 25\text{MHZ} = 12.5\text{MHZ}$  to  $112.5\text{MHZ} - 75\text{MHZ} = 37.5\text{MHZ}$ ), see Table 1 at column 5;
- one variable rank divider (26) located after the synthesizer (221-25); and
- a frequency controller (31) for deliver division rank command to the diver (26), the frequency command to the divider (21) for controlling the variable frequency steps and the synthesis command to the divider (25) for controlling the synthesis steps.

With regard to claim 4, the variable-rank divider Nb takes the values  $N1=8$  to  $Np=24$ , these values following an arithmetic progression, and wherein the maximum frequency of the synthesizer is given by  $F4=8 \times 4.68\text{MHZ} = 37.5\text{MHZ}$ .

With regard to claims 6 and 8, the variable-rank divider (26) takes the values  $N1=8$  to  $Np=24$ .

With regard to claims 7 and 14,  $F3=12.5\text{MHZ}$  is substantially equal to or smaller than  $aF4=8/12 \times 37.5\text{MHZ} = 25\text{MHZ}$  where  $a=8/12$  is the smallest value obtained in dividing two consecutive elements one after the other.

With regard to claim 9, as understood, the mixer is read on the phase detector (22) of Petersson et al where it receives the output signal (fvco) and a mixing signal (fref).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 5, 12 and 17, as understood, are rejected under 35 USC 103(a) as being unpatentable over Petersson et al (US 5,140,284) in view of Dekker (US 6,239,660) and Figure 2 of the applicant's admitted prior art.

Petersson et al discloses a synthesizer circuit with all of the limitations of the base claim as stated above but does not disclose that a filter is placed after the divider as recited in claim 2 and the synthesizer is a fractional step phase-locked loop synthesizer as recited in claim 3.

Nevertheless, Dekker teaches in Figure 2 a synthesizer circuit comprising a filter (212) placed after the synthesizer (200) for removing unwanted high frequency noise.

The applicant's admitted prior art teaches in Figure 2 a synthesizer comprising a fractional step modulo for providing fractional frequency steps.

It would have been obvious to a person having skill in the art at the time the invention was made to employ the filter taught by Dekker in the circuit of Petersson for the purpose of removing unwanted high frequency noise and the fractional step modulo taught by the admitted prior art in the circuit of Petersson et al for the purpose of providing fractional frequency steps.

With regard to claims 5 and 12, although the step frequency  $F_3=12.5\text{MHz}$  is not equal or slightly lower than  $(N_1/N_2)*F_4=8/24 \times 37.5\text{MHz}=25\text{MHz}$  as claimed; however, the step frequency of Petersson et al can be selected by selecting the divisors P and R as shown on Table 1 at column 5. Thus, selecting a predetermined frequency step for the circuit of Petersson in order

Art Unit: 2816

to accommodate with the requirement of a predetermined system in which the circuit of Petersson is to be used would have been obvious at the time of the invention. The same is true for claim 17 in which the reference frequency and the step frequency can be selected to equal to the LCM of the sequence  $N_1 \dots N_b$ .

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY CALLAHAN can be reached at (571) 272-1740.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DINH LE  
Primary Examiner